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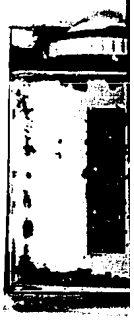

USSR WORK ON ANTIBIOTICS

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[Comment: Following are reports and discussion presented at a meeting of the Moscow Society of Therapeutists held on 11 March 1953.]

Report of Prof Z. V. Yermol'yeva

The effect of antibiotics on the entire organism, with the nervous system participating, is not limited solely to their action on microorganisms. For this reason it must be realized that the term "antibiotic" is incorrect and inaccurate. The definition of antibiotics must be broad enough to include antibacterial substances obtained both from animal and plant tissues. Lysozyme belongs to this class of substances: it has the property of inhibiting the propagation of many microorganisms. Erythrin, which is obtained from erythrocites, is an effective agent against diphtheria bacilli borne by carriers of diphtheria. Ekmolin has a strong antihistaminic effect and exerts a bacteriostatic action on microorganisms which cause cholera, dysentery, and other diseases. Ekmolin has been shown to check the growth of the influenza virus in vitro. Nonprotein preparations from liver check the development of hematogenic tuberculosis in mice. Kampolon does not possess any antibiotic properties, but it can neutralize diphtheria toxin.

Antibacterial substances also have been obtained from onions, plums, bird cherries, tomatoes, eucalyptus, and leaves of the tangerine tree. Tomatin and sativin have been isolated from garlic; these two drugs inhibit the growth of pathogenic fungi. The extracts and phytoncides mentioned above are destructive to a number of insects.

The mold substance, penicillin, has not been surpassed by any other antibiotic. It is supplied in the form of its sodium salt, calcium salt, and novocain salt (novocillin). Ekmonovocillin exerts a prolonged and strengthened penicillin effect as compared with penicillin. Ekmolin also prolongs the action of penicillin when the latter is administered perorally. Tablets which dissolve in the mouth have been formulated on the basis of this property. Penicillin inhaled in the form of an aerosol is effective against pneumonia and bronchiectasis; the size of the particles of penicillin must not exceed 10 μ.

Streptomycin is supplied in the form of its calcium salt and calcium chloride [double] salt. The calcium chloride salt may be administered endolumbarly, into the eye, intrapleuraly, and into other cavities. The calcium salt should be administered only intramuscularly. Lately "streptomycinpaskat" [streptomycin paraaminosalicylate], composed of streptomycin and paraaminosalicylic acid, has come into use. Streptomycin is effective in the treatment of tuberculosis, plague, and tularemia. Combination of streptomycin with sulgin [sulfanil-guanidine] and sulfathiazole improves the effectiveness of streptomycin against cholera and dysentery. Use of streptomycin in ekmolin and of penicillin in novocain produces positive therapeutic effects in lingering septic endocardites and urogenital diseases.

Synthomycin and levomycetin are synthetic antibiotics that correspond to chlormycetin. Synthomycin and levomycetin are quite effective in the treatment of typhoid, typhus, brucellosis, and trachoma. Biomycin (aureomycin) is also effective against these diseases. It is advisable to use terramycin against rikettsial infections.

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When using antibiotics in combination with each other it is necessary to bear in mind that one antibiotic may counteract the action of another.

Report of I. I. Poroshina

Combination therapy with antibiotics is based on the different mechanisms of the action exerted by individual antibiotics. Penicillin disorganizes the metabolism of amino acids, proteins, and nucleotides; streptomycin disorganizes oxidizing processes within the microbial cells. Combination therapy prevents development of resistant forms of microbes.

I. I. Poroshina presented the results of her own experimental and clinical data in order to prove the expediency of combining administration of penicillin and streptomycin with that of levomycetin and biomycin. In the treatment of croupous and localized postinfluenzal pneumonia, administration of pencillin combined with ekmolin twice a day or of ekmonovocillin once a day produces effects similar to those produced by administration of penicillin alone every 3 hours. Out of 210 pneumonia patients thus treated, not a single one died. and in 75% of the patients the temperature became normal within 2 to 4 days.

Combination therapy with antibiotics produces better results than therapy with individual antibiotics administered separately.

Discussion

Prof I. A. Kassirskiy related his observations on the effects of combination treatment of septic diseases with penicillin, streptomycin, and biomycin. Complete recovery was noted in many cases of lingering specific endocarditis and cholangitis. He illustrated his talk with examples from clinical practice.

Prof A. L. Myasnikov, chairman of the meeting, observed that the availability of new antibiotics and their application in accordance with the principles of combination therapy are greatly enlarging the potentialities of this type of treatment. Combination therapy must be evaluated strictly from the scientific point of view.

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